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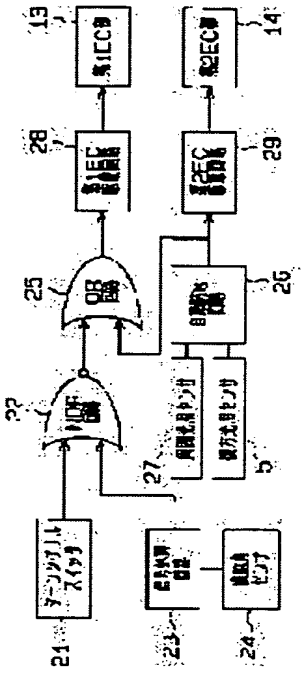
(71)Applicant : TOKAI RIKA CO LTD
(72)Inventor : NAKAHO JUNICHI
ONO KOICHI

(54) VISUAL FIELD WIDENING MIRROR

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a visual field widening mirror which reduces the sense of incompatibility.
SOLUTION: A door mirror has glass having a spherical surface and a nonspherical surface. A second EC part 14 is provided on the position coping with the spherical surface of the glass. While, a first EC part 13 is provided on the position coping with the non-spherical surface part of the glass. A second EC part 14 is connected with a second EC drive circuit 29, which is connected to an automatic dazzle prevension circuit 26, which is connected to a sensor 27 for a surrounding light and a sensor 5 for rearside light 5. While, a first EC part 13 is connected to a first EC drive circuit 28, which is connected to a turn signal switch 21 and a steering angle sensor 24 through OR circuit 25, NOR circuit 22 and a signal processing circuit 23. The OR circuit 25 is connected to the automatic dazzle prevention circuit 26.



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CLAIMS

[Claim(s)]

[Claim 1] The 1st mirror part (11) which has a flat surface or arbitrary curvatures, and the 2nd mirror part which has a flat surface or arbitrary curvatures (12), The 1st reflection factor variant part prepared in the front face of a reflective film (13c) of the 1st mirror part (11) of the above (13), It is the visual field expansion mirror to which it has the control means (28 29) which carry out adjustable control of the reflection factor of the aforementioned 1st reflection factor variant part (13), and the aforementioned control means (28 29) carry out adjustable control of the reflection factor of the aforementioned 1st reflection factor variant part (13) by the output signal from the 1st trigger means (21, 23, 24).

[Claim 2] in a visual field expansion mirror according to claim 1, the 2nd reflection factor variant part (14) prepares in the front face of a reflective film (14c) of the 2nd mirror part (12) of the above -- having -- the aforementioned control means (28 29) -- the output signal from the 2nd trigger means (5, 26, 27) -- the [the above 1st and] -- the visual field expansion mirror which carries out adjustable control of the reflection factor of 2 reflection-factor variant part (13 14)

[Claim 3] It is a visual field expansion mirror containing the turn signal lamp switch (21) in which the aforementioned 1st trigger means carries out an ON operation by operation of a direction directions lever in a visual field expansion mirror according to claim 1.

[Claim 4] It is a visual field expansion mirror containing the digital disposal circuit (23) which generates an output signal based on the operation angle at the time of the handle operation which the steering angle sensor (24) by which the aforementioned 1st trigger means detects the operation angle at the time of handle operation in a visual field expansion mirror according to claim 1, and the aforementioned steering angle sensor (24) detect.

[Claim 5] The visual field expansion mirror according to claim 2 characterized by providing the following The aforementioned 2nd trigger means is a sensor (27) for

ambient lights which detects the quantity of light of this visual field expansion mirror circumference. The sensor for back light which detects the quantity of light irradiated from this visual field expansion mirror back (5) The automatic anti-dazzle circuit which generates an output signal based on the quantity of light which the aforementioned sensor for ambient lights (27) detects, and the quantity of light which the aforementioned sensor for back light (5) detects (26)

[Claim 6] It is the visual field expansion mirror whose aforementioned 1st reflection factor variant part (13) is the electrochromic section in a claim 1 or the visual field expansion mirror of the publication among [1 / any] 5.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to a visual field expansion mirror.

[0002]

[Description of the Prior Art] In the door mirror of the conventional automobile, the so-called aspheric surface mirror which prepared the spherical-surface section and the aspheric surface section in the mirror part is known. The curvature of the aspheric surface section is larger than the curvature of the spherical-surface section, and the aspheric surface mirror is set up. Therefore, an aspheric surface mirror can expand a visual field rather than the door mirror by which the whole mirror part was constituted from the spherical-surface section.

[0003]

[Problem(s) to be Solved by the Invention] However, in the door mirror which adopted the aspheric surface mirror, since the curvature of the aspheric surface section was set up more greatly than the curvature of the spherical-surface section as described above, sense of incongruity might arise to the operator by the abrupt change of curvature. Moreover, although it is possible to give the curvature which is different from mirror parts, such as an inner mirror, and to expand a visual field besides a door mirror, there is a possibility that sense of incongruity may arise like a door mirror also in this case.

[0004] The purpose of this invention is to offer the visual field expansion mirror by which sense of incongruity is mitigated.

[0005]

[Means for Solving the Problem] In order to solve the above-mentioned trouble in invention of a claim 1 The 1st mirror part which has a flat surface or arbitrary curvatures, and the 2nd mirror part which has a flat surface or arbitrary curvatures, It has the 1st reflection factor variant part prepared in the front face of a reflective film of the 1st mirror part of the above, and the control means which carry out adjustable control of the reflection factor of the aforementioned 1st reflection factor variant part. the aforementioned control means The visual field expansion mirror which carries out adjustable control of the reflection factor of the aforementioned 1st reflection factor variant part by the output signal from the 1st trigger means is made into the summary.

[0006] in a visual field expansion mirror according to claim 1, the 2nd reflection factor variant part prepares invention of a claim 2 in the front face of a reflective film of the 2nd mirror part of the above -- having -- the aforementioned control means -- the output signal from the 2nd trigger means -- the [the above 1st and] -- it is making to carry out adjustable control of the reflection factor of 2 reflection-factor variant part into the summary

[0007] Invention of a claim 3 makes it the summary for the aforementioned 1st trigger means to contain the turn signal lamp switch which carries out an ON operation by operation of a direction directions lever in the visual field expansion mirror according to claim 1.

[0008] Invention of a claim 4 makes it the summary for the aforementioned 1st trigger means to contain the steering angle sensor which detects the operation angle at the time of handle operation, and the digital disposal circuit which generates an output signal based on the operation angle at the time of the handle operation which the aforementioned steering angle sensor detects in the visual field expansion mirror according to claim 1.

[0009] Invention of a claim 5 is set to a visual field expansion mirror according to claim 2. the aforementioned 2nd trigger means The sensor for ambient lights which detects the quantity of light of this visual field expansion mirror circumference, and the sensor for back light which detects the quantity of light irradiated from this visual field expansion mirror back, It is making into the summary to include the automatic anti-dazzle circuit which generates an output signal based on the quantity of light which the aforementioned sensor for ambient lights detects, and the quantity of light which the aforementioned sensor for back light detects.

[0010] Invention of a claim 6 makes it the summary for the aforementioned 1st reflection factor variant part to be the electrochromic section in the claim 1 or the visual field expansion mirror of the publication among [1 / any] 5.
[0011] (Operation) In invention of a claim 1, if the output signal for enlarging a reflection factor from the 1st trigger means is outputted, the reflection factor of the 1st reflection factor variant part will be enlarged by control means. Therefore, the visibility of a reflected image reflected by the 1st mirror part goes up, and a visual field is expanded. Moreover, if the output signal for making a reflection factor small from the 1st trigger means is outputted, the reflection factor of the 1st reflection factor variant part will be made small by control means. Therefore, the visibility of a reflected image reflected by the 1st mirror part falls, and the sense of incongruity produced by the abrupt change of curvature is mitigated.
[0012] if the output signal for making a reflection factor small from the 2nd trigger means is outputted in invention of a claim 2 -- control means -- the [the 1st and] -- the reflection factor of 2 reflection-factor variant part is made small for example, the case where the output signal for making a reflection factor small from the 2nd trigger means is outputted when a dazzling light carries out incidence to the 1st and 2nd mirror parts, and this ******** does not carry out incidence to the 1st and 2nd mirror parts -- comparing -- this -- the reflection factor of the 1st and 2nd mirror parts is made small Therefore, in case the reflected image reflected by the 1st and 2nd mirror parts is checked by looking, the so-called anti-dazzle operation of not becoming dazzling is performed.
[0013] In invention of a claim 3, if a turn signal lamp switch carries out an ON operation, the reflection factor of the 1st reflection factor variant part will be enlarged by control means. Therefore, the visibility of a reflected image reflected by the 1st mirror part goes up, and a visual field is expanded. Moreover, in the state of OFF of a turn signal lamp switch, the reflection factor of the 1st reflection factor variant part is made small by control means. Therefore, the visibility of a reflected image reflected by the 1st mirror part falls, and the sense of incongruity produced by the abrupt change of curvature is mitigated.
[0014] In invention of a claim 4, if the output signal for enlarging a reflection factor from a digital disposal circuit is outputted, the reflection factor of the 1st reflection factor variant part will be enlarged by control means. Therefore, the visibility of a reflected image reflected by the 1st mirror part goes up, and a visual field is expanded. Moreover, if the output signal for making a reflection factor small from a digital disposal circuit is outputted, the reflection factor of the 1st reflection factor variant

part will be made small by control means. Therefore, the visibility of a reflected image reflected by the 1st mirror part falls, and the sense of incongruity produced by the abrupt change of curvature is mitigated.

[0015] if the output signal for making a reflection factor small from an automatic anti-dazzle circuit is outputted in invention of a claim 5 -- control means -- the [the 1st and] -- the reflection factor of 2 reflection-factor variant part is made small Therefore, in case the reflected image reflected by the 1st and 2nd mirror parts is checked by looking, anti-dazzle operation of not becoming dazzling is performed.

[0016] In invention of a claim 6, adjustable [of the reflection factor of the electrochromic section] is carried out. Therefore, an operation of invention of a claim 1 or the publication among [1 / any] 5 is done so.

[0017]

[Embodiments of the Invention] (The 1st operation gestalt) The 1st operation gestalt which materialized this invention is hereafter explained according to a drawing.

Drawing 1 is the front view showing the door mirror 1 in an automobile. In drawing 1 , the door mirror 1 as a visual field expansion mirror is equipped with the mirror main part 4 which has the spherical-surface curvature section (henceforth the spherical-surface section) 2, and the aspheric surface curvature section (henceforth the aspheric surface section) 3.

[0018] With this operation gestalt, the door mirror 1 of right-and-left both sides has the opposite physical relationship of right and left of the spherical-surface section 2 and the aspheric surface section 3, since other composition is the same, explains only the right-hand side door mirror 1, and omits explanation of the left-hand side door mirror 1. The aspheric surface section 3 of the right-hand side door mirror 1 is formed in the right-hand side of the cross direction of the spherical-surface section 2, in order to expand a right-hand side visual field. In addition, in order that the aspheric surface section 3 may expand a left-hand side visual field in the case of the left-hand side door mirror 1, it is prepared in the left-hand side of the cross direction of the spherical-surface section 2.

[0019] Moreover, with this operation gestalt, the curvature of the aspheric surface section 3 is set up more greatly than the curvature of the spherical-surface section 2. Furthermore, in the door mirror 1, the sensor 5 for back light is formed under the mirror main part 4, and this sensor 5 for back light is attached where the light sensing portion is exposed.

[0020] As shown in drawing 3 , the mirror main part 4 is equipped with the 1st mirror part 11 which has reflective film 13c, and the 2nd mirror part 12 which has reflective

film 14c. The 1st mirror part 11 corresponding to the aspheric surface section 3 is equipped with the 1st glass section 15 and the 1st electrochromic section (henceforth the 1st EC section) 13 as the 1st reflection factor variant part prepared in the rear face (it sets to drawing 3 and is the bottom) of this 1st glass section 15. Moreover, the 2nd mirror part 12 corresponding to the spherical-surface section 2 is equipped with the 2nd glass section 16 and the 2nd electrochromic section (henceforth the 2nd EC section) 14 as the 2nd reflection factor variant part prepared in the rear face of this 2nd glass section 16.

[0021] The 1st EC section 13 is equipped with reflective film 13c used as transparent-electrode 13a, coloring layer 13b, and a counterelectrode. Transparent-electrode 13a has fixed in the 1st glass section 15. And reflective film 13c is prepared in the position in which transparent-electrode 13a was prepared, and the position which counters. It is arranged so that transparent-electrode 13a and reflective film 13c may become parallel mutually, and coloring layer 13b is prepared between this transparent-electrode 13a and reflective film 13c.

[0022] If coloring layer 13b impresses right potential to either among transparent-electrode 13a and reflective film 13c and a negative potential is impressed to another side, it will be colored. On the other hand, if coloring layer 13b impresses a negative potential to either among transparent-electrode 13a and reflective film 13c and right potential is impressed to another side, it will be decolorized.

[0023] With this operation gestalt, if right potential is impressed to transparent-electrode 13a and a negative potential is impressed to reflective film 13c, it will color and coloring layer 13b will cover reflective film 13c. With this operation gestalt, the state where impressed right potential to transparent-electrode 13a, and the negative potential was impressed to reflective film 13c is called coloring voltage impression state. Therefore, in the state of coloring voltage impression, the light from the outside has stopped being able to arrive to reflective film 13c easily. Consequently, in the state of coloring voltage impression, the visibility of a reflected image reflected in the 1st glass section 15 falls.

[0024] Moreover, if a negative potential is impressed to transparent-electrode 13a and right potential is impressed to reflective film 13c, coloring layer 13b will decolorize and will become transparent. With this operation gestalt, the state where impressed the negative potential to transparent-electrode 13a, and right potential was impressed to reflective film 13c is called decolorization voltage impression state. Therefore, in the decolorization voltage impression state, the light from the outside is

reflected through reflective film 13c. Consequently, in the state of decolorization voltage impression, the visibility of a reflected image reflected in the 1st glass section 15 goes up. Moreover, the 2nd EC section 14 is equipped with reflective film 14c used as transparent-electrode 14a which functions as the 1st EC section 13 similarly, coloring layer 14b, and a counterelectrode.

[0025] the [next, / the 1st and] -- the electric composition for carrying out adjustable control of the reflection factor of the 2EC sections 13 and 14 is explained drawing 4 -- the [the 1st and] -- it is the block diagram showing the electric composition for carrying out adjustable control of the reflection factor of the 2EC sections 13 and 14

[0026] The turn signal lamp switch 21 is connected to one input terminal of NOR circuit 22 in drawing 4 . By operating the direction directions lever which is not illustrated, a turn signal lamp switch 21 carries out an ON operation, and outputs an ON signal (signal of H level) to NOR circuit 22. For example, when a direction directions lever is operated up to turn left, a turn signal lamp switch 21 carries out an ON operation. Moreover, when a direction directions lever is operated caudad to turn to the right, a turn signal lamp switch 21 carries out an ON operation.

[0027] The steering angle sensor 24 is connected to the input terminal of another side of NOR circuit 22 through the digital disposal circuit 23. The steering angle sensor 24 detects an operation angle when the handle which is not illustrated is operated. And a digital disposal circuit 23 outputs the signal of H level to NOR circuit 22, when the operation angle which the steering angle sensor 24 detected is beyond a predetermined value.

[0028] The output terminal of NOR circuit 22 is connected to one input terminal of OR circuit 25. The output terminal of the automatic anti-dazzle circuit 26 is connected to the input terminal of another side of OR circuit 25. The automatic anti-dazzle circuit 26 is connected with the sensor 27 for ambient lights, and the aforementioned sensor 5 for back light. The sensor 27 for ambient lights is formed in the door mirror 1 neighborhood, and detects the quantity of light of the door mirror circumference. The sensor 5 for back light detects the quantity of light irradiated from the back of a door mirror 1. And the automatic anti-dazzle circuit 26 processes electrically the difference of the quantity of light which the sensor 27 for ambient lights detected, and the quantity of light which the sensor 5 for back light detected, and outputs the processing result to OR circuit 25.

[0029] The output terminal of OR circuit 25 is connected to the input terminal of the 1st EC drive circuit 28. The 1st EC drive circuit 28 is connected to the 1st EC section

13, and this 1st EC drive circuit 28 carries out adjustable control of the reflection factor of the 1st EC section 13. That is, if the signal of L level is inputted from OR circuit 25, the 1st EC drive circuit 28 will impress a negative potential to transparent-electrode 13a of the 1st EC section 13, and will impress right potential to reflective film 13c, and will make the 1st EC section 13 a decolorization voltage impression state. Moreover, if the signal of H level is inputted from OR circuit 25, the 1st EC drive circuit 28 will impress right potential to transparent-electrode 13a of the 1st EC section 13, and will impress a negative potential to reflective film 13c, and will make the 1st EC section 13 a coloring voltage impression state.

[0030] The output terminal of the aforementioned automatic anti-dazzle circuit 26 is connected to the input terminal of the 2nd EC drive circuit 29. The 2nd EC drive circuit 29 is connected to the 2nd EC section 14, and this 2nd EC drive circuit 29 carries out adjustable control of the reflection factor of the 2nd EC section 14. That is, if the signal of L level is inputted from the automatic anti-dazzle circuit 26, the 2nd EC drive circuit 29 will impress a negative potential to transparent-electrode 14a of the 2nd EC section 14, and will impress right potential to reflective film 14c, and will make the 2nd EC section 14 a decolorization voltage impression state. Moreover, if the signal of H level is inputted from the automatic anti-dazzle circuit 26, the 2nd EC drive circuit 29 will impress right potential to transparent-electrode 14a of the 2nd EC section 14, and will impress a negative potential to reflective film 14c, and will make the 2nd EC section 14 a coloring voltage impression state.

[0031] It reaches 1st EC drive circuit 28, and control means are constituted from this operation gestalt by the 2nd EC drive circuit 29. Moreover, the 1st trigger means is constituted by the turn signal lamp switch 21, the digital disposal circuit 23, and the steering angle sensor 24. Furthermore, the 2nd trigger means is constituted by the sensor 5 for back light, the automatic anti-dazzle circuit 26, and the sensor 27 for ambient lights.

[0032] Next, an operation of the door mirror 1 constituted as mentioned above is explained. First, without operating a direction directions lever, a turn signal lamp switch 21 is in the state of OFF, and it is in the state where the operation angle of a handle is under a predetermined value, and the state where incidence of the dazzling light from a back vehicle is not carried out to the sensor 5 for back light is explained further (for example, when operating in the daytime etc.). With this operation gestalt, when it is in the state where a turn signal lamp switch 21 is in the state of OFF, and the operation angle of a handle is under a predetermined value, this is usually called visual field state.

[0033] In the state of OFF of a turn signal lamp switch 21, an OFF signal (signal of L level) is outputted to one input terminal of NOR circuit 22. Moreover, when the operation angle of a handle is under a predetermined value, the signal of L level is outputted to the input terminal of another side of NOR circuit 22 from a digital disposal circuit 23. Therefore, since the signal of L level is inputted into both two input terminals of NOR circuit 22, the output signal of this NOR circuit 22 turns into a signal of H level. And the signal of this H level is inputted into one input terminal of OR circuit 25.

[0034] Moreover, in the state where incidence of the dazzling light from a back vehicle is not carried out to the sensor 5 for back light, since there is almost no difference of the quantity of light which the sensor 27 for ambient lights detects, and the quantity of light which the sensor 5 for back light detects (for example, when operating in the daytime etc.), the automatic anti-dazzle circuit 26 outputs the signal of L level to the input terminal of another side of OR circuit 25. Therefore, since the signal of H level is inputted into one input terminal between two input terminals of OR circuit 25, the output signal of this OR circuit 25 turns into a signal of H level. And the signal of this H level is inputted into the 1st EC drive circuit 28.

[0035] If the signal of H level is inputted, the 1st EC drive circuit 28 will impress right potential to transparent-electrode 13a of the 1st EC section 13, and will impress a negative potential to reflective film 13c, and will make the 1st EC section 13 a coloring voltage impression state. In the state of coloring voltage impression, coloring layer 13b of the 1st EC section 13 colors, and the light from the outside is intercepted by this coloring layer 13b, and stops being able to arrive easily to reflective film 13c. Therefore, the reflection factor of the 1st EC section 13 corresponding to the aspheric surface section 3 becomes small, and the visibility of a reflected image reflected in the 1st glass section 15 falls.

[0036] Next, it is one of cases at least in in case the operation angle of the case where a direction directions lever is operated, and a handle is beyond a predetermined value, and the state where incidence of the dazzling light from a back vehicle is not carried out to the sensor 5 for back light is explained (for example, when operating in the daytime etc.). With this operation gestalt, when it is one of cases at least in in case the operation angle of the case where a direction directions lever is operated, and a handle is beyond a predetermined value, this is called visual field expansion state.

[0037] A direction directions lever is operated, or when the operation angle of a handle is beyond a predetermined value, the signal of H level is inputted into one of

input terminals at least between two input terminals of NOR circuit 22. In this case, the output signal of NOR circuit 22 turns into a signal of L level, and the signal of this L level is inputted into one input terminal of OR circuit 25. And if the signal of L level is inputted into the input terminal of another side of OR circuit 25 for said reasons of operation of daytime etc., since the signal of L level will be inputted into both two input terminals of this OR circuit 25, the output signal of OR circuit 25 turns into a signal of L level. And the signal of this L level is inputted into the 1st EC drive circuit 28.

[0038] If the signal of L level is inputted, the 1st EC drive circuit 28 will impress a negative potential to transparent-electrode 13a of the 1st EC section 13, and will impress right potential to reflective film 13c, and will make the 1st EC section 13 a decolorization voltage impression state. In the state of decolorization voltage impression, coloring layer 13b of the 1st EC section 13 decolorizes, and becomes transparent, and the light from the outside is reflected through reflective film 13c. Therefore, the reflection factor of the 1st EC section 13 corresponding to the aspheric surface section 3 becomes large, the visibility of a reflected image reflected in the 1st glass section 15 goes up, and a visual field is expanded.

[0039] That is, in the visual field expansion state, the reflection factor of the 1st EC section 13 corresponding to the aspheric surface section 3 is enlarged, the visibility of a reflected image reflected in the 1st glass section 15 goes up by this operation gestalt, and a visual field is expanded by it. Moreover, in the visual field state, the reflection factor of the 1st EC section 13 corresponding to the aspheric surface section 3 is usually made small. Therefore, the visibility of a reflected image reflected in the 1st glass section 15 falls, and the sense of incongruity produced by the abrupt change of curvature is mitigated.

[0040] Next, said cases where incidence of the dazzling light from a back vehicle is usually carried out to the sensor 5 for back light in a visual field state, such as at the at the time of a run and the run in a tunnel etc., are explained. [Night] When [said /, such as at the at the time of a run and the run in a tunnel etc.,] incidence of the dazzling light from a back vehicle is usually carried out to the sensor 5 for back light in a visual field state, the difference of the quantity of light which the sensor 27 for ambient lights detects, and the quantity of light which the sensor 5 for back light detects becomes large. [Night] Therefore, the signal of H level is inputted into the input terminal of another side of OR circuit 25 from the automatic anti-dazzle circuit 26. On the other hand, as described above, the signal of H level is inputted into one input terminal of OR circuit 25. That is, since the signal of H level is inputted into both

two input terminals of OR circuit 25, the output signal of this OR circuit 25 turns into a signal of H level.

[0041] And by inputting the signal of this H level into the 1st EC drive circuit 28, this 1st EC drive circuit 28 impresses right potential to transparent-electrode 13a of the 1st EC section 13, as described above, and it impresses a negative potential to reflective film 13c, and makes the 1st EC section 13 a coloring voltage impression state. Therefore, coloring layer 13b colors and the reflection factor of the 1st EC section 13 corresponding to the aspheric surface section 3 is made small.

[0042] Moreover, if the signal of H level outputted from the automatic anti-dazzle circuit 26 is inputted into the 2nd EC drive circuit 29, this 2nd EC drive circuit 29 will impress right potential to transparent-electrode 14a of the 2nd EC section 14, and will impress a negative potential to reflective film 14c, and will make the 2nd EC section 14 a coloring voltage impression state. Therefore, coloring layer 14b colors and the reflection factor of the 2nd EC section 14 corresponding to the spherical-surface section 2 is made small. the [consequently, / the 1st and] -- in case the reflected image reflected in 2 glass sections 15 and 16 is checked by looking, the so-called anti-dazzle operation of not becoming dazzling is performed

[0043] Next, the cases where incidence of the dazzling light from a back vehicle is carried out to the sensor 5 for back light in said visual field expansion state, such as at the at the time of a run and the run in a tunnel etc., are explained. [Night] When [, such as at the at the time of a run and the run in a tunnel etc.,] incidence of the dazzling light from a back vehicle is carried out to the sensor 5 for back light in said visual field expansion state, as described above from NOR circuit 22, the signal of L level is inputted into one input terminal of OR circuit 25. [Night] Moreover, since the signal of H level is inputted into the input terminal of another side of OR circuit 25 from the automatic anti-dazzle circuit 26 as described above, the output signal of this OR circuit 25 turns into a signal of H level. Therefore, it reaches 1st EC drive circuit 28, and the signal of H level is inputted into both the 2nd EC drive circuits 29. the [consequently, / the 1st EC section 13 and] -- 2EC sections 14 -- both -- a coloring voltage impression state -- becoming -- the [the 1st and] -- in case the reflected image reflected in 2 glass sections 15 and 16 is checked by looking, the so-called anti-dazzle operation of not becoming dazzling is performed

[0044] Therefore, according to this operation gestalt, the following effects can be acquired.

(1) With this operation gestalt, in the state of visual field expansion, the 1st EC section 13 was changed into the decolorization voltage impression state by the 1st EC drive

circuit 28, and the reflection factor of this 1st EC section 13 was enlarged. Therefore, the visibility of a reflected image reflected in the 1st glass section 15 can go up, and a visual field can be expanded. Moreover, in the state of the visual field, the 1st EC section 13 was usually changed into the coloring voltage impression state by the 1st EC drive circuit 28, and the reflection factor of this 1st EC section 13 was made small. Therefore, the visibility of a reflected image reflected in the 1st glass section 15 can fall, and the sense of incongruity produced by the abrupt change of curvature can be mitigated.

[0045] (2) times of incidence of the dazzling light from a back vehicle being carried out to the sensor 5 for back light with this operation gestalt, such as at the at the time of a run and the run in a tunnel etc. etc., -- the [the 1st and] -- 2EC drive circuits 28 and 29 -- the [the 1st and] -- the 2EC sections 13 and 14 -- a coloring voltage impression state -- carrying out -- this -- the -- the reflection factor of the 2EC sections 13 and 14 was made small the [therefore, / the 1st and] -- in case the reflected image reflected in 2 glass sections 15 and 16 is checked by looking, the so-called anti-dazzle operation of not becoming dazzling can be performed

[0046] (3) With this operation form, it carried out adjustable [of the reflection factor of a door mirror 1] using the EC section. Therefore, the effect of a publication is done so to (1) and (2).

(4) With this operation gestalt, since the curvature of the aspheric surface section 3 was set up more greatly than the curvature of the spherical-surface section 2, a visual field is expanded rather than the door mirror in which the mirror main part 4 whole has the curvature of the spherical-surface section 2. Therefore, in a visual field expansion state, when the reflection factor of this 1st EC section 13 is enlarged by changing the 1st EC section 13 into a decolorization voltage impression state in the 1st EC drive circuit 28, the visibility of a reflected image reflected in the 1st glass section 15 can go up, and a visual field can be expanded.

[0047] (The 2nd operation gestalt) Next, the 2nd operation gestalt which materialized this invention is explained according to a drawing. In addition, the same sign is attached, the explanation is omitted and the same composition as the 1st operation gestalt or corresponding composition is explained centering on a different place.

[0048] Drawing 5 is the front view showing the inner mirror 41 in an automobile. In drawing 5 , the inner mirror 41 as a visual field expansion mirror is equipped with the mirror main part 4 which has the flat-surface section 42 and the curved-surface section 43. With this operation gestalt, the curved-surface section 43 is formed in the right-and-left both sides of the cross direction of the flat-surface section 42, in order

to expand the visual field of right-and-left both sides. Moreover, with this operation gestalt, the curvature of the curved-surface section 43 is set up more greatly than the curvature (curvature is 0 in this case) of the flat-surface section 42.

[0049] In the mirror main part 4, while the 1st EC section 13 is formed in the rear face of the 1st glass section 15 corresponding to the curved-surface section 43, the 1st EC section 13 and the same 2nd EC section 14 are formed in the rear face of the 2nd glass section 16 corresponding to the flat-surface section 42. the [and / the 1st and] -- adjustable control of the reflection factor is carried out by the electric composition shown in drawing 4 by the 2EC sections 13 and 14 like the aforementioned 1st operation gestalt

[0050] With this operation gestalt, the same operation as the aforementioned 1st operation gestalt can be obtained by having considered as the above composition. Therefore, according to this operation gestalt, in addition to the effect of a publication, the following effects can be acquired to (1) - (4) in the aforementioned 1st operation gestalt.

[0051] (5) With this operation gestalt, since the curved-surface section 43 was formed in the right-and-left both sides of the cross direction of the flat-surface section 42 and the curvature of this curved-surface section 43 was set up more greatly than the curvature of the flat-surface section 42, a visual field is expanded rather than the inner mirror to which the mirror main part 4 whole has the curvature of the flat-surface section 42. Therefore, in a visual field expansion state, when the reflection factor of this 1st EC section 13 is enlarged by changing the 1st EC section 13 into a decolorization voltage impression state in the 1st EC drive circuit 28, the visibility of a reflected image reflected in the 1st glass section 15 can go up, and a visual field can be expanded. Moreover, since the curved-surface section 43 was formed in the right-and-left both sides of the cross direction of the flat-surface section 42, the visual field of right-and-left both sides is expanded simultaneously, and can check certainly the reflected image of right-and-left both sides by looking.

[0052] In addition, you may change the operation gestalt of this invention as follows. - Although it carried out adjustable [of the reflection factor of the aspheric surface section 3 of a door mirror 1, or the curved-surface section 43 of the inner mirror 41] automatically with each aforementioned operation gestalt by outputting a signal (the signal of H level, and signal of L level) from the turn signal lamp switch 21 which constitutes the 1st trigger means, or a digital disposal circuit 23, it is good also as following composition. That is, the manual switch which constitutes the 1st trigger means instead of a turn signal lamp switch 21 or a digital disposal circuit 23 is formed,

and it is made to carry out adjustable [of the reflection factor of the aspheric surface section 3 of a door mirror 1, or the curved-surface section 43 of the inner mirror 41] by changing this manual switch manually. The effect of a publication is acquired by (1) - (5) in each aforementioned operation gestalt when it does in this way.

[0053] - although adjustable control of the reflection factor of the 1st EC section 13 was carried out in the 1st EC drive circuit 28 and adjustable control of the reflection factor of the 2nd EC section 14 was carried out with each aforementioned operation gestalt in the 2nd EC drive circuit 29 again -- one EC drive circuit as control means -- the [the 1st EC section 13 and] -- you may carry out adjustable control of the reflection factor of 2EC sections 14 The effect of a publication is acquired by (1) - (5) in each aforementioned operation gestalt when it does in this way.

[0054] - further -- each aforementioned operation gestalt -- the [the 1st and] -- although the EC section was used as a 2 reflection-factor variant part -- instead of [of the EC section] -- the [the 1st and] -- you may use the liquid crystal section as a 2 reflection-factor variant part thus, an effect given in (1), (2), (4), and (5) -- in addition, the effect that power consumption can be reduced is acquired [in / each aforementioned operation gestalt / when it carries out]

[0055] - With each aforementioned operation gestalt, although the 2nd EC section 14 was formed in the part corresponding to the spherical-surface section 2 of a door mirror 1, or the flat-surface section 42 of the inner mirror 41, you may omit the 2nd EC section 14 further again. That is, it considers as the door mirror which formed the 1st EC section 13 only in the part corresponding to the aspheric surface section 3 of a door mirror 1, or the curved-surface section 43 of the inner mirror 41, or an inner mirror. thus, an effect given in (1) - [in / each aforementioned operation gestalt / when it carries out] (5) -- in addition, the 2nd EC drive circuit 29 which carries out adjustable control of the reflection factor of the 2nd EC section 14 can be omitted, and the effect that cost can be reduced is acquired Moreover, since adjustable [of the reflection factor of the aspheric surface section 3 of a door mirror 1 or the curved-surface section 43 of the inner mirror 41] is carried out also in this case, the sense of incongruity produced by the abrupt change of curvature is mitigable.

[0056] - Although the curved-surface section 43 was formed in the right-and-left both sides of the cross direction of the flat-surface section 42 in the inner mirror 41 with the aforementioned 2nd operation gestalt, it is good also as an inner mirror which formed the curved-surface section 43 only in either again. The effect of a publication is acquired by (1) - (4) in the aforementioned 1st operation gestalt when it does in this way.

[0057] – Although the 1st trigger means was constituted from a turn signal lamp switch 21, a digital disposal circuit 23, and a steering angle sensor 24 and adjustable control of the reflection factor of the 1st EC section 13 was further carried out with each aforementioned operation gestalt based on this turn signal lamp switch 21 and the output signal from a digital disposal circuit 23, it is good also as following composition. That is, a turn signal lamp switch 21 is omitted, the 1st trigger means is constituted so that a digital disposal circuit 23 and the steering angle sensor 24 may be included, and only based on the output signal from this digital disposal circuit 23, adjustable control of the reflection factor of the 1st EC section 13 is carried out.
[0058] Moreover, a digital disposal circuit 23 is omitted, unlike the above, the 1st trigger means is constituted so that a turn signal lamp switch 21 may be included, and only based on the output signal from this turn signal lamp switch 21, adjustable control of the reflection factor of the 1st EC section 13 is carried out. The effect of a publication is acquired by (1) – (5) in each aforementioned operation form when it does in this way.
[0059] – With the aforementioned 1st operation form, shape was taken further again to the door mirror 1 equipped with the 1st mirror part 11 which has aspheric surface curvature, and the 2nd mirror part 12 which has spherical–surface curvature. Moreover, although shape was taken with the aforementioned 2nd operation form to the inner mirror 41 equipped with the 1st mirror part 11 of a curved surface, and the 2nd plane (curvature is 0) mirror part 12, you may take shape to the following visual field expansion mirrors. That is, you may take shape to the visual field expansion mirror equipped with the 1st plane mirror part and the 2nd plane mirror part. Moreover, you may take shape to the visual field expansion mirror equipped with the 1st plane mirror part and the 2nd mirror part which has curvatures, such as the spherical surface or the aspheric surface. The effect of a publication is acquired by (1) – (3) in the aforementioned 1st operation form when it does in this way.
[0060] – Although considered as the composition which shows the mirror main part 4 to drawing 3 with each aforementioned operation form again, it is good also as composition shown in drawing 7 – drawing 9 . That is, the mirror main part 4 of each aforementioned operation form is changed as follows, although considered as composition equipped with the 2nd EC section 14 prepared in the rear face of the 1st glass section 15, the 1st EC section 13 prepared in the rear face (it sets to drawing 3 and is the bottom) of this 1st glass section 15, the 2nd glass section 16, and this 2nd glass section 16.
[0061] As shown in drawing 7 , it is good also as a mirror main part 4 of composition of

having had the 2nd EC section 14 prepared in the front face of the 1st glass section 15, the 1st EC section 13 prepared in the front face (it sets to drawing 7 and is the bottom) of this 1st glass section 15, the 2nd glass section 16, and this 2nd glass section 16. moreover, it is shown in drawing 8 -- as -- the [the 1st and] -- the 2EC sections 13 and 14 are inserted -- as -- the [of a couple / the 1st and] -- it is good also as a mirror main part 4 of composition of having arranged 2 glass sections 15 and 16

[0062] Furthermore, it is good also as a mirror main part 4 shown in drawing 9 . That is, the transparent electrodes 13a and 14a of a couple are arranged so that the coloring layers 13b and 14b may be pinched. and the coloring layers 13b and 14b and transparent electrodes 13a and 14a are inserted -- as -- the [of a couple / the 1st and] -- 2 glass sections 15 and 16 are arranged the [and / of the aforementioned couple / the 1st and] -- the inside of 2 glass sections 15 and 16 -- the [on the backside (it sets to drawing 9 and is the bottom) / the 1st and] -- the reflective films 13c and 14c are formed in 2 glass sections 15 and 16 The effect of a publication is acquired by (1) - (5) in each aforementioned operation form when it does in this way.

[0063] Next, technical thought other than invention indicated to the claim which can be grasped from each aforementioned operation form and example of another is indicated below with those effects.

(1) If the aforementioned control means are equipped with the 1st control section and the 2nd control section and an output signal is outputted from the aforementioned 1st trigger means in a visual field expansion mirror according to claim 2 If adjustable control of the reflection factor of the aforementioned 1st reflection factor variant part is carried out by the 1st control section of the above and an output signal is outputted from the aforementioned 2nd trigger means, while adjustable control of the reflection factor of the aforementioned 1st reflection factor variant part will be carried out by the 1st control section of the above It is characterized by adjustable control of the reflection factor of the aforementioned 2nd reflection factor variant part being carried out by the 2nd control section of the above.

[0064] Therefore, if the output signal for enlarging a reflection factor from the 1st trigger means is outputted according to invention given in this (1), the reflection factor of the 1st reflection factor variant part will be enlarged by the 1st control section. Therefore, the visibility of a reflected image reflected by the 1st mirror part goes up, and a visual field is expanded. Moreover, if the output signal for making a reflection factor small from the 1st trigger means is outputted, the reflection factor of the 1st reflection factor variant part will be made small by the 1st control section. Therefore,

the visibility of a reflected image reflected by the 1st mirror part falls, and the effect that the sense of incongruity produced by the abrupt change of curvature is mitigable is acquired.

[0065] Moreover, if the output signal for making a reflection factor small from the 2nd trigger means is outputted, while the reflection factor of the 1st reflection factor variant part will be made small by the 1st control section, the reflection factor of the 2nd reflection factor variant part is made small by the 2nd control section. for example, the case where the output signal for making a reflection factor small from the 2nd trigger means is outputted when a dazzling light carries out incidence to the 1st and 2nd mirror parts, and this ******** does not carry out incidence to the 1st and 2nd mirror parts -- comparing -- this -- the reflection factor of the 1st and 2nd mirror parts is made small Therefore, in case the reflected image reflected by the 1st and 2nd mirror parts is checked by looking, the so-called anti-dazzle operation of not becoming dazzling can be performed. the [in addition, / the above 1st and] -- in 2 operation gestalten, the 1st EC drive circuit 28 constitutes the 1st control section Moreover, the 2nd EC drive circuit 29 constitutes the 2nd control section.

[0066]

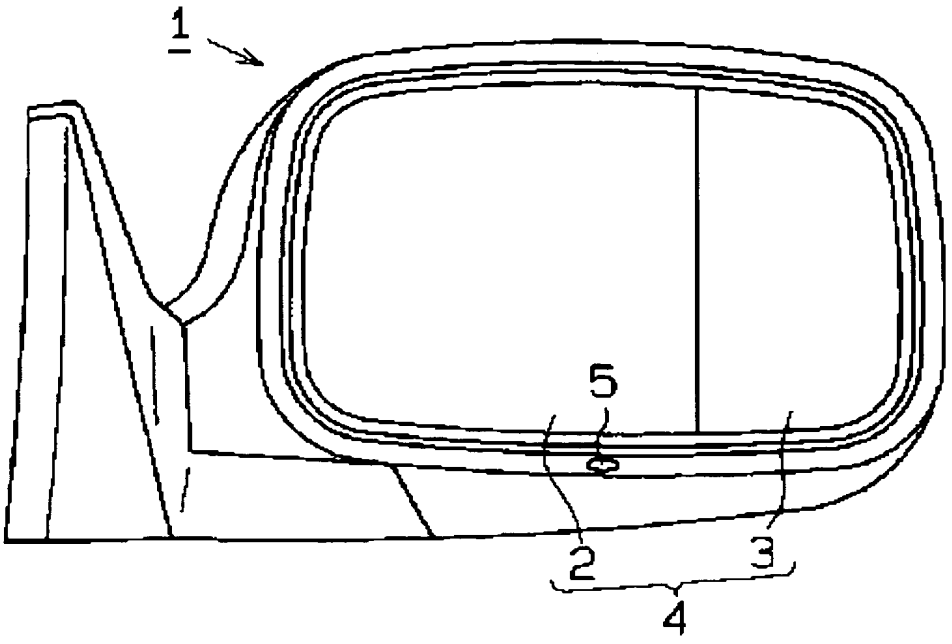
[Effect of the Invention] As explained in full detail above, when the reflection factor of the 1st reflection factor variant part is made small by control means according to invention according to claim 1 to 6, the sense of incongruity produced by the abrupt change of curvature can be mitigated.

[0067] according to a claim 2 and invention according to claim 5 -- an effect of the invention according to claim 1 -- in addition, control means -- the [the 1st and] -- when the reflection factor of 2 reflection-factor variant part is made small, anti-dazzle operation can be performed

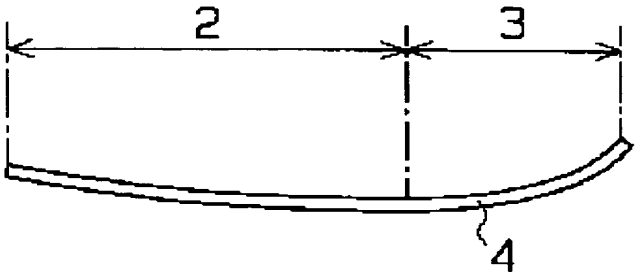
[0068] According to invention according to claim 6, the effect of the invention of a claim 1 or the publication among [1 / any] 5 is done so.

DRAWINGS

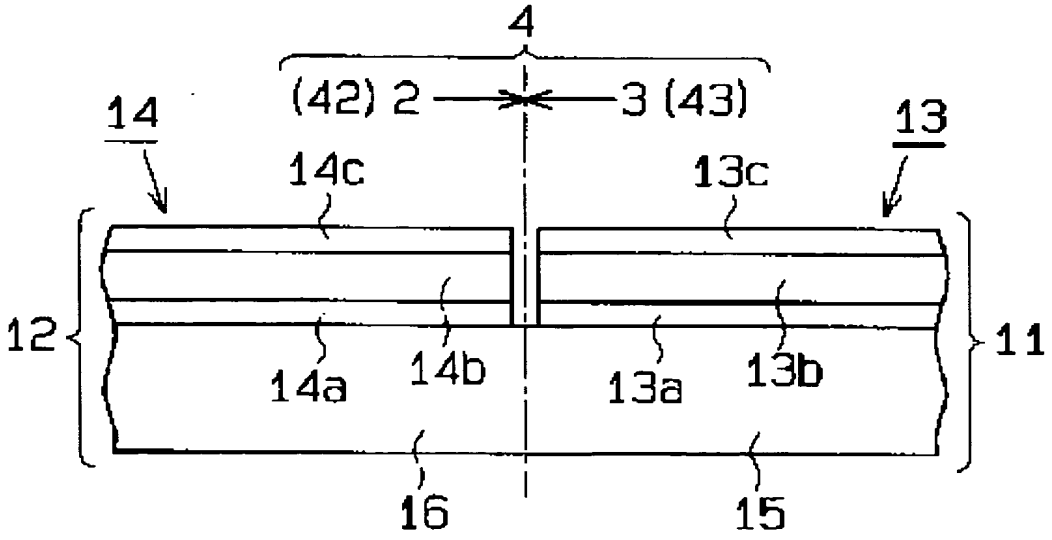
[Drawing 1]



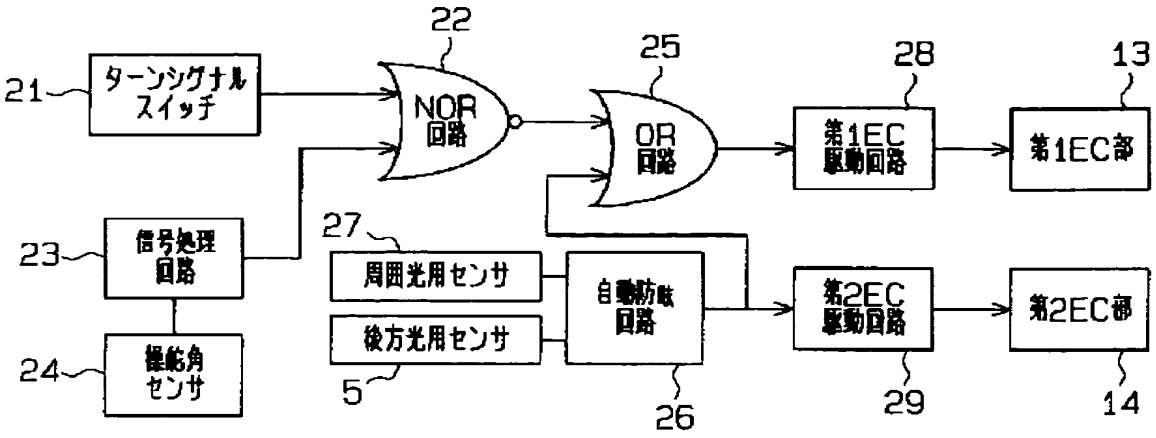
[Drawing 2]



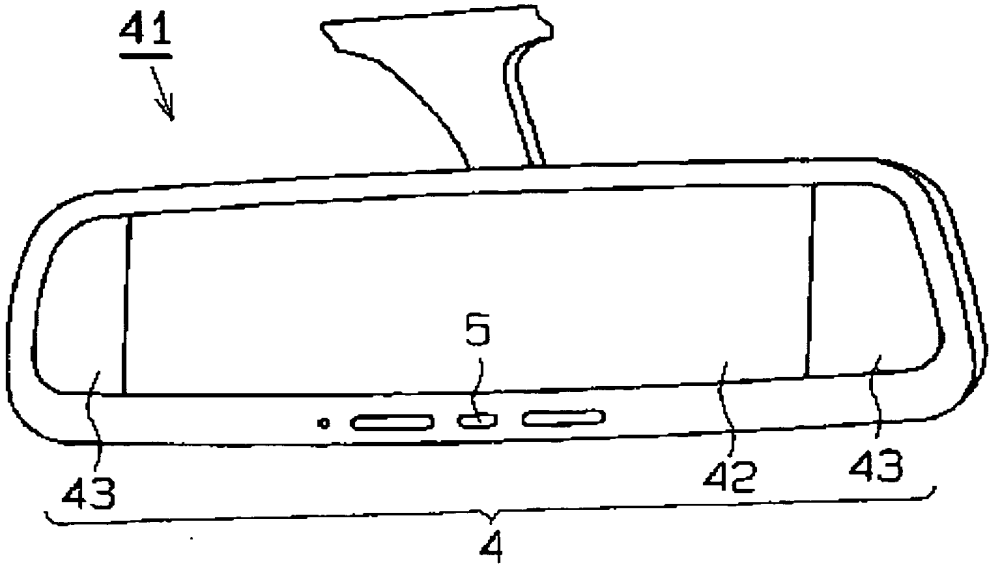
[Drawing 3]



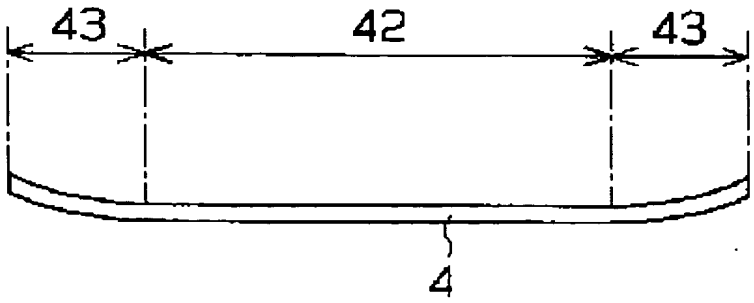
[Drawing 4]



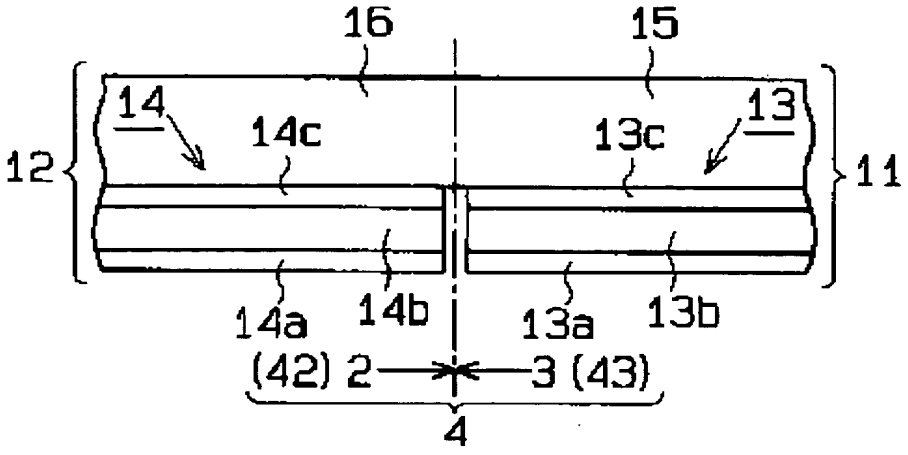
[Drawing 5]



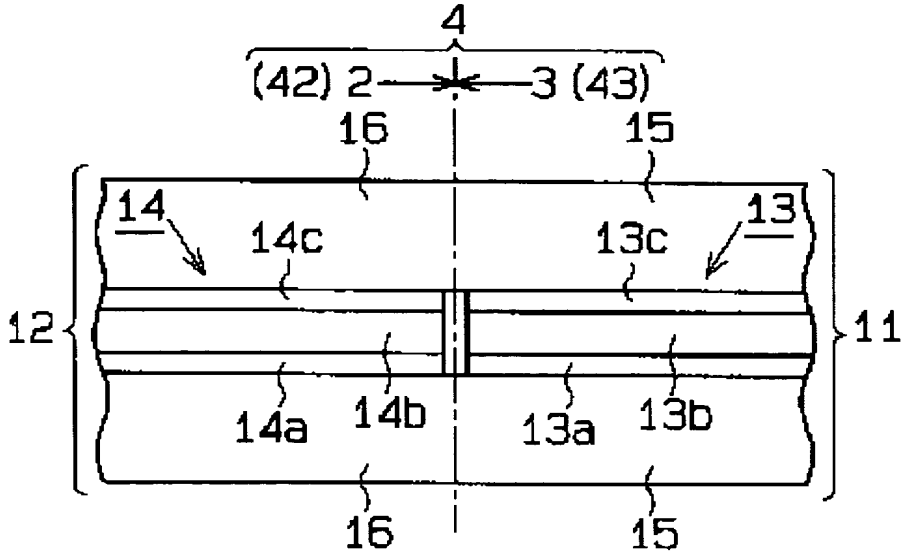
[Drawing 6]



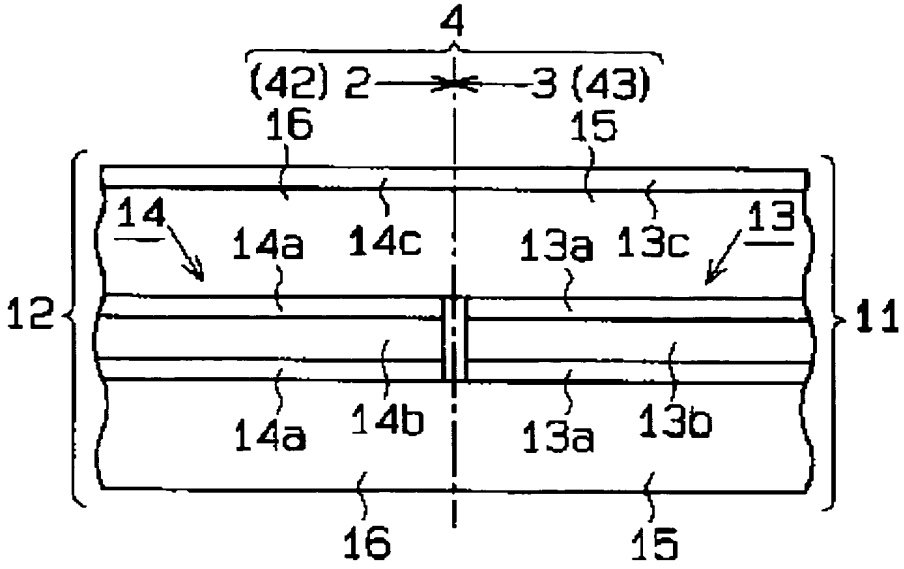
[Drawing 7]



[Drawing 8]



[Drawing 9]



DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] Front view of the door mirror in the 1st operation gestalt.

[Drawing 2] Similarly it is the plan of a mirror main part.

[Drawing 3] the [the 1st and] -- the ** type plan showing the composition of the mirror main part in 2 operation gestalten

[Drawing 4] the same -- the [the 1st and] -- the block diagram showing the electric composition for carrying out adjustable control of the reflection factor of 2EC sections

[Drawing 5] Front view of the inner mirror in the 2nd operation gestalt.

[Drawing 6] Similarly it is the plan of a mirror main part.

[Drawing 7] The ** type plan showing example of another of the composition of a mirror main part.

[Drawing 8] The ** type plan showing example of another of the composition of a mirror main part.

[Drawing 9] The ** type plan showing example of another of the composition of a mirror main part.

[Description of Notations]

1 — The door mirror as a visual field expansion mirror, 5 — The sensor for back light which constitutes the 2nd trigger means, 11 [— The 1st EC section as the 1st reflection factor variant part,] — The 1st mirror part, 12 — The 2nd mirror part, 13 13c [— Reflective film,] — A reflective film, 14 — The 2nd EC section as the 2nd reflection factor variant part, 14c 21 — The turn signal lamp switch, 23 which constitute the 1st trigger means — The digital disposal circuit which constitutes the 1st trigger means, 24 — The steering angle sensor, 26 which constitute the 1st trigger means — The automatic anti-dazzle circuit which constitutes the 2nd trigger means, 27 [— The 2nd EC drive circuit, 41 which constitute control means / — Inner mirror as a visual field expansion mirror.] — The sensor for ambient lights, 28 which constitute the 2nd trigger means — The 1st EC drive circuit, 29 which constitute control means